

**Remarks**

Claims 1, 7, 9-10, 13-17, 26, 29, 31-32, and 39 having been amended, claim 30 having been canceled, and claims 40-44 having been added, the claims pending in the above-identified patent application are claims 1-29 and 31-44.

It is noted with appreciation that claims 11, 30, 31, and 39 are free of any art rejections. New claim 40 is claim 11 rewritten in independent form. Claim 30 has been incorporated into claim 29. Claim 39 has been written in independent form.

Support for the amendments to claims 1, 13, 15, and 32, can be found, for example, at page 3, lines 24-26, and page 13, lines 9-11 of the specification, and in the originally filed claims. The language added to these claims has been put in proper Markush form. Although this specific language does not appear in the specification, it would be understood by one of skill in the art.

It is noted that claims 1 and 15 recite that  $R^1$  includes one or more substituents selected from the group consisting of heteroatoms and functional groups. Additionally, in claims 1 and 15,  $R^1$  optionally includes halides. In contrast, in claims 13, 32, and the new claims, each of these substituents is optional.

Support for the recitation of " $C_1-C_4$ " in place of "lower" in claims 1, 7, 13, 15, and 32, can be found, for example, at page 3, lines 27-29 of the specification.

Support for the amendment to claim 29 with respect to the nitrogen-containing linking groups can be found, for example, in claim 30 as originally filed. Support for the amendment with respect to the placement of the antisoiling coating can be found at page 3, lines 13-15 of the specification.

Support for the amendment to claim 39 can be found, for example, in claims 29 and 35 as originally filed.

Support for new claims 41-44 can be found, for example, in the claims as originally filed, particularly claims 1 and 15. Claims 41 and 42 recite that  $y$  is 2 and  $R_f$  is a divalent polyfluoro polyether group. Hence the compounds of Formula I include two silane groups. Claims 43 and

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44 are the same as claims 1 and 15 as amended without the "coating composition" language. Support for these claims can be found in the originally filed claims.

Claims 9-10, 14, 16-17, and 26 have been amended to recite preferred Markush claim language, i.e., selected from the group consisting of. Claims 10 and 17, as well as the specification at pages 12 and 13, have been amended to correct errors in the formula  $(X'C_nF_{2n+1}O)$ . One of skill in the art would understand that it should be  $F_{2n}$  instead of  $F_{2n+1}$ . With this change made, there would be duplicative formulae; hence it would again be understood by one of skill in the art that one of the two would include oxygen and one would not.

Claim 31 has been amended in its dependency.

In amending the above claims, Applicants are not acquiescing to the objections or rejections asserted by the Examiner. Applicants have amended the claims to further the prosecution of the current application and retain the right to file divisional or continuation applications to claim any canceled subject matter. No new matter has been added by these amendments.

Reconsideration and withdrawal of the pending rejections in light of the preceding amendments and accompanying remarks are respectfully requested.

**The Rejections under 35 U.S.C. §112, Second Paragraph**

Claims 1-39 were rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite. This rejection is respectfully traversed.

Claims 1, 7, 13, 15, and 32 were rejected as the Office Action alleged the phrases "lower alkyl group," "lower alkoxy group," and "lower acyloxy group," were indefinite. Claims 1, 7, 13, 15, and 32 have been amended and no longer recite the term "lower." As amended, the claims recite the phrases "C<sub>1</sub>-C<sub>4</sub> alkyl group," "C<sub>1</sub>-C<sub>4</sub> alkoxy group," and "C<sub>1</sub>-C<sub>4</sub> acyloxy group." The amendment renders the current rejection moot.

Claims 9-10, 14, 16-17, and 26 were rejected as the Office Action alleged the "and" should read --or-- "for proper Markush group." Claims 9-10, 14, 16-17, and 26 have been

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amended to recite the more appropriate Markush phrase "selected from the group consisting of." With the use of this language, "and" is more appropriate than "or." The amendment renders the current rejection moot.

Claim 24 was rejected as the Office Action alleged the phrase "soft roll" is indefinite. This rejection is respectfully traversed. Applicants maintain that the term "soft roll" is definite in view of the specification, the claims, and as understood by one of skill in the art. For example, at page 16, line 31 bridging to page 17, line 2 of the specification, Applicants state that in a two-roll stack design, the lower roll is a soft roll and the upper roll is a gravure roll. The web is supported by the soft roll. An example of a "soft roll" is set forth at page 24, lines 10-12 of the specification - a rubber roll commercially available from, for example, F.R. Gross Inc., Stow, OH. The rubber roll is employed as the soft roll and supports the web as it passes through a coater. One of skill in the art guided by Applicants' specification would readily understand the phrase soft roll as recited in claim 24 and as described in the specification. Reconsideration and withdrawal of the rejection under 35 U.S.C. §112 is respectfully requested.

Claim 29 was rejected as the Office Action alleged the phrase "an antisoiling coating" rendered the claim indefinite as location with respect to the anti-reflective coating is unclear. Claim 29 has been amended to recite that the antisoiling coating is positioned on the antireflective coating. The amendment renders the current rejection moot.

Claim 33 was rejected as the Office Action alleged that "the phrase R<sup>1</sup> group contains 'heteroatoms or functional groups' renders [the] claim indefinite because claim 33 depends from claim 32." Claim 32 has been amended to clarify that the compounds used to make the antisoiling coating optionally includes one or more substituents selected from the group consisting of heteroatoms, functional groups, and halides, plus the organic linking group of the antisoiling coating includes nitrogen (as recited in claim 29). Thus, this rejection is rendered moot.

Claim 34 was rejected as the Office Action alleged that "the phrase 'R<sup>1</sup> is a divalent hydrocarbon containing at least one function group' renders [the] claim confusing for the same

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reasons as for claim 33.” It is respectfully submitted that the language regarding heteroatoms, functional groups, and halides, whether optional or not, are definite in view of the specification, particularly the examples, the claims, and as understood by one of skill in the art.

Claims 35 and 36 were rejected as the Office Action alleged that the phrase “flexible organic polymeric material” renders the claim indefinite. Applicants maintain that the phrase “flexible organic polymeric material” is definite in view of the specification, the claims, and as would be understood by one of skill in the art. For example, at page 6, line 30 bridging to page 7, line 8 of the specification, Applicants state that suitable substrates according to the invention, include transparent thermoplastic materials such as poly(meth)acrylate, polycarbonate, polystyrene, styrene copolymers, such as acrylonitrile-butadiene-styrene copolymer and acrylonitrile-styrene copolymer, cellulose esters, particularly cellulose acetate and cellulose acetate-butyrate copolymer, polyvinyl chloride, polyolefins, such as polyethylene and polypropylene, polyimide, polyphenyleneoxide, and polyesters, particularly polyethylene terephthalate. The term “poly(meth)acrylate” (or “acrylic”) includes materials commonly referred to as cast acrylic sheeting, stretched acrylic, poly(methylmethacrylate) “PMMA”, poly(methacrylate), poly(acrylate), poly(methylmethacrylate-co-ethylacrylate), and the like.

The specification further states at page 7, lines 9-10, that although substrate thickness can vary, to provide for a “flexible organic” film it typically ranges from about 0.1 mm to about 1 mm. One of skill in the art guided by the detail provided in Applicants’ specification regarding suitable materials, would readily understand the phrase “flexible organic polymeric material” as recited in claims 35 and 36 and as described in the specification. Reconsideration and withdrawal of the rejection under 35 U.S.C. §112 is respectfully requested.

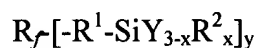
**The Rejection under 35 U.S.C. §102(b)**

Claims 1-10, 12-29, and 32-38 were rejected under 35 U.S.C. §102(b) as allegedly anticipated by Ochiai et al. (EP 0749021 A2). This rejection is respectfully traversed.

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Ochiai et al. relate to a light-transmitting antireflection filter (page 2, line 1). The antireflection filter contains a film or sheet-form transparent substrate, an antireflection coating on at least one surface of the substrate that contains an inorganic compound, and a stain proofing layer on the antireflection coating that contains a silane compound having a number average molecular weight of  $5 \times 10^2$  to  $1 \times 10^5$  represented by formula (I) (page 2, lines 27-49).

In contrast to Ochiai et al., Applicants' claims 1-12 are directed to an antireflective article containing a substrate having an antireflective surface and an antisoiling coating that includes a fluorinated siloxane prepared from a fluorinated silane of the following formula:



(I)

wherein:  $R_f$  is a monovalent or divalent polyfluoropolyether group;  $R^1$  is a divalent alkylene group, arylene group, or combinations thereof, wherein  $R^1$  includes one or more substituents selected from the group consisting of heteroatoms and functional groups, and further wherein  $R^1$  optionally includes one or more halides;  $R^2$  is a  $C_1$ - $C_4$  alkyl group; Y is a halide, a  $C_1$ - $C_4$  alkoxy group, or a  $C_1$ - $C_4$  acyloxy group; x is 0 or 1; and y is 1 or 2.

Furthermore, in contrast to Ochiai et al., Applicants' claims 13 and 14 are directed an antisoiling coating composition containing at least one fluorinated silane and an alkyl perfluoroalkyl ether.

Also, in contrast to Ochiai et al., Applicants' claims 15-27 are directed to a method of applying an antisoiling coating to a substrate having an antireflective surface, the method involving treating the antireflective surface with a coating composition having at least one fluorinated silane having a number average molecular weight of at least about 1000 and the following formula:



(I)

wherein:  $R_f$  is a monovalent or divalent polyfluoropolyether group;  $R^1$  is a divalent alkylene group, arylene group, or combinations thereof, wherein  $R^1$  includes one or more substituents

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selected from the group consisting of heteroatoms and functional groups, and further wherein R<sup>1</sup> optionally includes one or more halides; R<sup>2</sup> is a C<sub>1</sub>-C<sub>4</sub> alkyl group; Y is a halide, a C<sub>1</sub>-C<sub>4</sub> alkoxy group, or a C<sub>1</sub>-C<sub>4</sub> acyloxy group; x is 0 or 1; and y is 1 or 2. Claim 28 is directed to an article made by the method of claim 22.

Further, in contrast to Ochiai et al., Applicants' claims 29 and 31-38 are directed to an antireflective article including a transparent substrate having a first surface and a second surface, an antireflective coating on at least a portion of the first surface, and an antisoiling coating on the antireflective coating having siloxane groups and polyfluoropolyether segments covalently bonded to silicon via organic linking groups, wherein the polyfluoropolyether segments have a molecular weight of at least about 1000 and the organic linking groups include nitrogen atoms. Thus, Ochiai et al. do not teach or suggest Applicants' invention.

To anticipate a claim for a patent, a cited document must contain all the elements of that claim. As Ochiai et al. do not disclose an antireflective article, an antisoiling coating, or a method of applying an antisoiling coating to a substrate as recited in Applicants' claims, the document cannot anticipate Applicants' invention.

Reconsideration and withdrawal of the rejections under 35 U.S.C. §102(b) are respectfully requested.

### Summary

In view of the above amendments and remarks, reconsideration of the rejections are respectfully requested. If the Examiner has any questions or concerns with respect to the present

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**Amendment under 37 C.F.R. §1.111**

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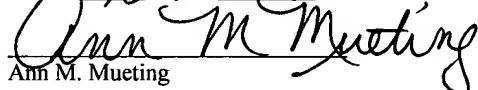
Filed: January 27, 1998

For: ANTISOILING COATINGS FOR ANTIREFLECTIVE SURFACES AND METHODS OF PREPARATION

application, the Examiner is encouraged to contact the Applicants' Representative, Ann Mueting, at (612) 305-1217.

**CERTIFICATE UNDER 37 C.F.R. 1.8:**

The undersigned hereby certifies that this paper is being deposited in the United States Postal Service, as first class mail, in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on this 10 day of January, 2000.

  
Ann M. Mueting

January 10, 2000  
Date

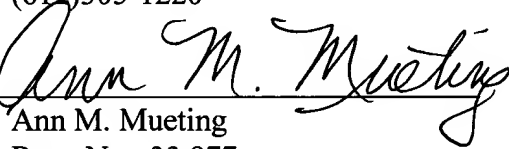
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Respectfully submitted,

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